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**Takagi**(10) **Pub. No.: US 2017/0276618 A1**(43) **Pub. Date: Sep. 28, 2017**(54) **GLASS BREAKAGE DETECTION**2291/0289 (2013.01); *G01N* 2291/0232  
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3/0421 (2013.01)(71) Applicant: **Apple Inc.**, Cupertino, CA (US)(72) Inventor: **Kazuya Takagi**, Tokyo-to (JP)(21) Appl. No.: **15/078,265**(22) Filed: **Mar. 23, 2016****Publication Classification**(51) **Int. Cl.*****G01N* 21/958** (2006.01)***G01N* 29/04** (2006.01)***G01N* 21/55** (2006.01)(52) **U.S. Cl.**CPC ..... ***G01N* 21/958** (2013.01); ***G01N* 21/55**  
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**ABSTRACT**

An electronic device includes one or more emitters, one or more receivers, and a glass or other breakable external component, such as the cover glass of a display. The emitters emit one or more waves that travel via the glass. The receivers are configured to receive the waves from the glass. Damage to the glass, cracks for example, interrupts and/or interferes with travel of the waves via the glass. The electronic device determines the presence and/or absence of damage to the glass based on whether or not the receivers receive the waves. The location of damage to the glass may also be determined.

